

CLAIMS

What is claimed is:

1. A processor-based method, comprising:
regressively clustering pixels of an image; and
segmenting the image based upon said regressively clustering such that
retrievable segments are formed within a memory coupled to a
micro-processor conducting the processor-based method.
2. The processor-based method of claim 1, wherein said regressively
clustering comprises regressively clustering the pixels with respect to a color
model characterizing the image.
3. The processor-based method of claim 2, wherein said regressively
clustering comprises:
regressing functions which each correlate pixels having an attribute of
similar value with respect to a first primary color of the color model;
and
clustering pixels of the image into distinct groups based upon the
regressed functions.
4. The processor-based method of claim 3, wherein said attribute comprises
brightness.
5. The processor-based method of claim 3, wherein said attribute comprises
a degree at which the first primary color changes from pixel to pixel.
6. The processor-based method of claim 3, wherein said regressively
clustering further comprises regressing functions which each correlate pixels
having an attribute of similar value with respect to a second primary color of the
color model.

7. The processor-based method of claim 6, wherein said regressively clustering further comprises regressing functions which each correlate pixels having an attribute of similar value with respect to a third primary color of the color model.
8. The processor-based method of claim 7, wherein said clustering comprises clustering the pixels based upon the regressed functions of the first, second and third primary colors.
9. The processor-based method of claim 1, further comprising mapping the pixels of the image into a three-dimensional color space prior to said regressively clustering the pixels.
10. The processor-based method of claim 9, wherein said mapping the pixels is with respect to time.
11. The processor-based method of claim 1, further comprising displaying at least one of the image segments independent of another of the image segments.
12. A storage medium comprising program instructions executable by a processor for:
 - determining a number of segments by which to distinguish portions of an image;
 - generating a set of functions, for each segment, which correlate criteria within the image, wherein each of the set of functions is based relative to a different primary color of a color model characterizing the image;
 - regressing, for each segment, the set of functions;
 - clustering pixels of the image into different groups based upon the regressed sets of functions; and
 - repeating said regressing and said clustering sequentially.

13. The storage medium of claim 12, wherein the program instructions for clustering the pixels comprises program instructions for:

partitioning pixels into distinct subsets prior to said regressing; and
re-partitioning the pixels into the distinct subsets subsequent to said regressing.

14. The storage medium of claim 13, further comprising program instructions executable by the processor for terminating said repeating when a partition of pixels within the subsets does not change from said partitioning to said re-partitioning.

15. The storage medium of claim 12, wherein the program instructions for clustering the pixels comprises program instructions for:

determining distances between values of the pixels and the functions;
computing probability and weighting factors from the determined distances, wherein the program instructions for regressing comprises program instructions for regressing the functions using the probability and weighting factors; and
soft-partitioning the pixels into the different groups based upon the regressed functions.

16. The storage medium of claim 15, further comprising program instructions executable by the processor for:

calculating harmonic averages of the distances;
computing a change in harmonic averages for the functions prior to and subsequent to said regressing; and
terminating said repeating when the change in harmonic averages is less than a predetermined value.

17. The storage medium of claim 12, wherein the program instructions for clustering the pixels comprises program instructions for:

determining probability factors of the pixels correlating to the functions, wherein the program instructions for regressing comprises program instructions for regressing the functions using the probability factors; and

soft-partitioning the pixels into the different groups based upon the regressed functions.

18. A system, comprising:

an input port configured to receive an image; and

a processor configured to:

regress functions which correlate pixels of the image with respect to different primary colors of a color model characterizing the image;

cluster the pixels into distinct segments using the regressed functions; and

reiterate said regress and cluster.

19. The system of claim 18, wherein the processor is further configured to map the pixels into the color model.

20. The system of claim 18, wherein the input port is configured to receive a static image.

21. The system of claim 18, wherein the input port is configured to receive a video image.

22. The system of claim 18, further comprising a display device configured to display the image and the distinct segments.

23. A system, comprising:
a first means to receive an image; and
a second means for regressively clustering pixels of the image to produce
distinct segmentations of the image.
24. The system of claim 23, further comprising a third means to characterize
the pixels into a three-dimensional color space.
25. The system of claim 23, wherein the third means is configured to
characterize the pixels into a red-green-blue color space.
26. The system of claim 23, wherein the third means is configured to
characterize the pixels into a cyan-magenta-yellow color space.
27. The system of claim 23, wherein the third means is configured to
characterize the pixels into the three-dimension color space with respect to time.